Data Used in the Clean Water Action Plan Unified Watershed Assessment

Name of Data Layer   Percent Interior Forest Area in Watershed

Definition (General Description)   Percent of watershed land that is covered by interior forest.

Data Sources   MRLC land cover (v3); INRA watershed boundaries

Data Type: Condition __X__ Stressor ___ Vulnerability ____ Trend ____ Growth ____
        Other _____

Method of Calculation
        Used ARC GRID to calculate interior forest using MRLC and SHA roads. Interior forest
        was defined as forested land cover at least 300 feet from differing land cover or primary,
        secondary, or county roads (e.g., roads considered large enough to break the canopy).
        Percent area equals the area of interior forest in the watershed, divided by the total land
        area within the watershed, multiplied by 100. Forest (deciduous forest, evergreen forest,
        mixed forest, and woody wetland) and land area (all cells except those classified as open
        water) were calculated from MRLC v3.

Watershed Scale: Tributary Strategy Region[1] ___ USGS 8-Digit ____ MD 6-Digit ____
MD 8-Digit _X_ MD 12-Digit ____ Adaptable to Any Scale ____Other _____

Data Custodian   MRLC (EPA Region III) Version 2 - USEPA; watershed summary table -
                      DNR-Watershed Management and Analysis Division

Clean Water Goal: Yes __?__ No ____
        If Yes: Description of Goal _____

Other Natural Resource Goal: Yes __?__ No ____
        If Yes: Benchmark Goal ____ Relative Goal ____
        Description of Goal - Protect forested ecosystem processes within watershed.

Assumptions

Comments   Forested ecosystems provide water quality protection, aquifer recharge, soil
             protection and replenishment, CO_2 absorption, wildlife habitat, timber, hunting,
             fishing, and other recreational opportunities, and many other benefits. Watersheds
             did not include area outside Maryland.

---

[1]The Youghiogeny watershed and the Coastal Bays region are considered to be Tributary
Strategy Regions for the purposes of this program

Changes in insolation and other physical parameters at created edges change plant and animal communities there, and processes like nutrient cycling (Forman and Godron, 1986; Brown et al, 1990). Edge habitat differs from interior forest in tree species composition, primary production, structure, development, animal activity, and propagule dispersal capabilities (Brown et al, 1990; Kapos et al, 1993). The edge communities shift to more shade-intolerant, more xeric tree and shrub species, and early successional species (Brown et al, 1990). These then broadcast propagules that invade the forest interior (Brown et al, 1990). Opportunistic animals also often invade the interior from edges, and often prey on, outcompete, or parasitize interior species (Reese and Ratti, 1988; Robinson, 1988; Brown et al, 1990; Dunning et al, 1992). Increased nest predation may extend 300 to 600 meters inside the forest (Reese and Ratti, 1988; Yahner, 1988; Brown et al, 1990). Cowbirds parasitize bird nests up to 1000 feet from the forest edge (Reese and Ratti, 1988; Brown et al, 1990). Cats and dogs from developed areas can prey on or harass wildlife. Cats, which hunt on instinct, range large areas (30-228 ha); one cat studied with a regular diet of domestic food killed over 1600 mammals and 60 birds during an 18 month period (Brown et al, 1990).

Harris (1984), Brown et al (1990), and Kapos et al (1993) cite a distance of 2-3 tree heights from the forest edge to reduce the effects of sunlight and wind penetration. This translates to about 300 ft, and could be considered the abiotic transition zone. However, some forest interior birds nest further from the edge than this (Bushman and Therres, 1988). Further, Gates and Evans, in a study of brown-headed cowbirds in 1996, detected 94% of female breeding fixes within 220 m of forest edges. They defined interior forest as >=250 m (820 ft) from the edge. About 60% of telemetry fixes were within 50 m of the edge (Gates and Evans, 1996).

<u>References</u>   see references.wpd.